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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/722,146

Applicant(s)

CACCAVALE, FRANK S.

Examiner

CAMQUY TRUONG

Art Unit

2195

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SG/US)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Claims 1-36 are presented for examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1-6 and 19- 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rietschote et al. (U.S. Patent 7,203,944 B1) (hereinafter Van) in view of Greuel et al. (U.S. 7,003,564 B2) (herein after Greuel), and further in view of Baratz et al. (U.S. 2002/0034190 A1) (herein after Baratz).**

4. Van, Greuel and Baratz were cited in the last office action.
5. As to claims 1 and 19, Van teaches the invention substantially as claimed including: in a data processing network including distributed processing units, a method comprising:

obtaining a respective utilization value of each distributed processing unit (the load on computer system 10A-10N may be the sum of the loads of the virtual machines executing on that computer system, col. 5, lines 14-16. In order to calculate the load (weight) on the computer systems 10A-10N, the loads of the virtual machines (applications) are obtained. Thus, Van inherently and obviously to one of ordinary skill in the art discloses a respective loads of the virtual machines of computer system is obtain(utilization value of each distributed processing unit is obtaining;

applying a function (formula 9, Fig. 4; col. 10, lines 47-49) to the respective utilization value of said each distributed processing unit to obtain a respective weight (load / weight, col. 11, lines 3-14) for said each distributed processing unit (the load on computer system 10A-10N may be the sum of the loads of the virtual machines executing on that computer system, col. 5, lines 14-16, and the load of each virtual machine may be calculated according to the resource that it uses, col. 8, lines 35-37/ the amount of CPU time used by the virtual machine (CPUTime in FIG. 4), the amount of I/O activity (I/O Activity in FIG. 4) generated by the virtual machine, and the amount of memory consumed by the virtual machine (Memory Pages in FIG. 4) are included in the load calculation, col. 10, lines 47-54); and

using the respective weights for the distributed processing units for distributing work requests to the distributed processing units so that the respective weight for said each distributed processing unit (if the requesting computer system's load exceeds the selected computer system's load, the virtual machine migration code may migrate the

selected virtual machine to the selected computer system, col. 9, lines 3-9; col. 2, lines 16-24).

6. Van does not explicitly teach obtaining a respective weight by using a mapping function. However, Greuel teaches obtaining a respective weight by using a mapping function (for each system variable, a mapping by which a raw data value associated with the corresponding system variable is mapped to a score, and for each system variable, a weight, col. 2, lines 39-42 / a score mapped from the CPU utilization, col. 5, lines 4-29).

7 It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Van by incorporating the teaching of a respective weight by using a mapping function as taught by Greuel in order to gain the advantage of monitoring of the health or status of a computer network to determine whether the computer network is online or offline (i.e., up or down) as a result of providing reliable, available and high performing computer networks and applications.

8. Van and Greuel do not explicitly teach the respective weight for said each distributed processing unit specifies a respective frequency at which the work requests are distributed to said each distributed processing unit. However, Baratz teaches the respective weight for said each distributed processing unit specifies a respective frequency at which the work requests are distributed to said each distributed processing

unit (monitoring the usage information from one or more of the network elements, based on this monitoring, the availability server predicts a forth coming time interval during which sufficient network elements will be available send a message to one or more user, paragraph 47-48).

9. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Van and Greuel by incorporating the teaching of the respective weight for said each distributed processing unit specifies a respective frequency at which the work requests are distributed to said each distributed processing unit as taught by Baratz because this allow to monitor the available of idle resources in a network and use these resource for additional services.

10. As to claims 2 and 20, Greuel teaches wherein the respective utilization value of said each distributed processing unit is a percentage of saturation of said each distributed processing unit (Fig. 2B, CPU utilization present a percentage).

11. As to claims 3-4 and 21-22, Greuel teaches said each distributed processing unit collects statistics for calculation of the respective utilization value of said each distributed processing unit (the data collector collects a raw data value corresponding to the system variable, col. 2, lines 22-23; and col. 3, lines 38-40).

12. As to claims 5 and 23, Greuel teaches wherein the respective weight for said

each distributed processing unit is programmed into a mapping table (certain entries in the table 233 can be hyperlinks to get more details information about that entry. For example, the numbers in the interface health column of the table 233 can be hyperlinks. Clicking on the "100%" interface health score corresponding to the router resource named "cisco2522", col. 5, lines 29-45 / table 233, Fig. 2B; col. 5, lines 4-29), and the mapping function is applied to the respective utilization value of said each distributed processing unit to obtain the respective weight for said each distributed processing unit by indexing the mapping table with the respective utilization value of said each distributed processing unit to obtain the respective weight for said each distributed processing unit (the table 233 contains columns for the router name (or the address) (index), and the overall score in this example is computed as the weighted average of two numbers: (1) the interface health and (2) and a score mapped from the CPU utilization, col. 5, lines 4-10).

13. As to claims 6 and 24, they are rejected for the same reason as claim 1. In addition, Van teaches the function is selected to provide weights estimated to cause a balancing of loading upon the distributed processing units (randomly selects another computer system 10A 10N with which to compare loads. If the other computer system 10A -10N has a lower load, the VM migration code may migrate a virtual machine to the other computer system. The VM migration code on each computer system 10A 10N may be activated periodically, and may randomly select another computer system with which to compare loads (weights) and to potentially migrate a virtual machine. Over

time, the periodic random selecting by each computer system may lead to relative balance in the loads on the computer systems, col. 5, lines 22-37; and col. 8, lines 40-54).

14. **Claims 7-8 and 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rietschote et al. (U.S. 7,203,944 B1) (hereinafter Van) in view of Greuel et al. (U.S. 7,003,564 B2) (herein after Greuel) and further in view of Baratz et al. (U.S. 2002/0034190 A1) (herein after Baratz) as applied to claims 1 and 19 above, and further in view of Garnett et al. (U.S. 7,032,037) (herein after Garnett).**

15. Garnett was cited in the previous office action.

16. As to claims 7 and 25, Van, Greuel and Baratz do not explicitly teach wherein the respective weights are used for weighted round-robin load balancing of the work requests upon the distributed processing units. However, Garnett teaches wherein the respective weights are used for weighted round-robin load balancing of the work requests upon the distributed processing units (load balancing algorithm is the "weighted round robin" where the number of connections assigned per server is specified by a weight assigned to each server, col. 32, lines 13-16).

17. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Van, Greuel, and Baratz by incorporating the teaching of the respective weights are used for weighted round-robin load balancing of the work requests upon the distributed processing units as taught by Garnett in order to gain the advantage of preventing a particular application on the server is overloaded as suggest by Garnett.

18. As to claims 8 and 26, Garnett teaches the weighted round-robin load balancing performs round-robin load balancing when the weights are equal (all the servers have the same weight, col. 32, lines 16-18).

19. **Claims 9 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rietschote et al. (U.S. 7,203,944 B1) (hereinafter Van) in view of Greuel et al. (U.S. 7,003,564 B2) (herein after Greuel) and further in view of Baratz et al. (U.S. 2002/0034190 A1) (herein after Baratz) as applied to claims 1 and 19 above, and further in view of Kapoor (U.S. 5,884,038).**

20. Kapoor was cited in the last office action.

21. As to claims 9 and 27, Van, Greuel, and Baratz do not explicitly teach the respective weights for the distributed processing units are used for distributing work requests to the distributed processing units by creating a distribution list containing

entries indicating the distributed processing units, the respective weight for said each distributed processing unit specifying the number of the entries indicating said each distributed processing unit, and by randomizing the distribution list, and accessing the randomized distribution list for distributing the work requests to the distributed processing units as indicated by the entries in the randomized distribution list.

22. However, Kapoor teaches teach the respective weights for the distributed processing units are used for distributing work requests to the distributed processing units by creating a distribution list containing entries indicating the distributed processing units (an array A of numbers with W elements is created, the first w1 elements of array A are assigned a number, which corresponds to the web server with weight w1..., col. 5, lines 48-60 / the domain name server connects to each web server and removes the down web servers from the list, col. 5, lines 42-44 / after array A has been created, col. 5, lines 60-61) the respective weight for said each distributed processing unit specifying the number of the entries indicating said each distributed processing unit (the domain name server returns the IP address of a web server such that the total number of times that the IP address of each one of the web servers is returned in proportional to the relative weight of each web server, col. 5, lines 11-16), and by randomizing the distribution list (the domain name server randomize the list of web server, col. 5, lines 15-16 / the order of all the elements and array A are randomized, col. 5, lines 60-63), and accessing the randomized distribution list for distributing the work requests to the distributed processing units as indicated by the

entries in the randomized distribution list (The domain name server returns the IP address of a web server such that the total number of times that the IP address of each one of the web servers is returned is proportional to the relative weight of each web server, col. 2, lines 55-63). In order to return the IP address of a web server to a client, the domain name server has to access the web server lists. Thus, it would have been obvious that the Kapoor teaches accessing the randomized distribution list for distributing the work requests to the distributed processing units as indicated by the entries in the randomized distribution list).

23. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Van, Greuel, and Baratz by incorporating the teaching of creating a distribution list containing entries indicating the distributed processing units, the respective weight for said each distributed processing unit specifying the number of the entries indicating said each distributed processing unit, and by randomizing the distribution list, and accessing the randomized distribution list for distributing the work requests to the distributed processing units as indicated by the entries in the randomized distribution list as taught by Kapoor because this would allow to efficiently utilize the multiple web servers of an Internet host as well as reduce the skewed locking problems such that overall Internet traffic and response times are reduced (col. 2, lines 47-52).

24. **Claims 10 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Rietschote et al. (U.S. Patent 7,203,944 B1) in view of Greuel et al. (U.S. 7,003,564 B2) (herein after Greuel), further in view of Baratz et al. (U.S. 2002/0034190 A1) (herein after Baratz) as applied to claims 1 and 19 above, and further in view of Grochowski (U.S. 6,115,807).**

25. Grochowski was cited in the last office action.

26. As to claims 10 and 28, Van, Greuel, Baratz do not explicitly teach re-randomizing the distribution list for re-use once the end of the distribution list is reached during the distributing of the work requests to the virus checking servers as indicated by the entries in the randomized distribution list. However, Grochowski teaches re-randomizing the distribution list for re-use once the end of the distribution list is reached during the distributing of the work requests to the virus checking servers as indicated by the entries in the randomized distribution list (if the decoder comes to the end of the queue, it rotates around to the beginning of queue (col.2, lines 65-67). As to the limitation of "randomize", Grochowski teaches "rotating". Noting that randomizer is also defined as rotator. Extrinsic evidence, inventor name (U.S. 6,819,276), disclose randomizer is also defined as rotator (col. 5, lines 46-47).

27. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Van, Greuel, Garnett and Kapoor by

incorporating the teaching of re-randomizing the distribution list for re-use once the end of the distribution list is reached during the distributing of the work requests to the virus checking servers as indicated by the entries in the randomized distribution list as taught by Grochowski in order to gain advantage of determining how many of the decoded instructions may issue in a next clock cycle thereby to ensure that neither too many nor too few instructions enter pipeline at any given time thereby improve the effective of processors.

28. Claims 11 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable Van Rietschote et al. (U.S. 7,203,944 B1) (hereinafter Van) in view of Greuel et al. (U.S. 7,003,564 B2) (herein after Greuel), and further in view of Kapoor (U.S. 5,884,038).

29. As to claims 11 and 29, Van teaches the invention substantially as claimed including: in a data processing network including distributed processing units, a method comprising:

obtaining a respective utilization value of each distributed processing unit (the load (weight) of each virtual machine may be calculated according to the resource that it uses, col. 8, lines 35-37; and col. 10, lines 47-54), in order to calculate the load (weight) the resource usage of the virtual machine is obtained, thus Van inherently discloses obtaining a respective utilization value of each distributed processing unit;

applying a function (formula 9, Fig. 4; and col. 10, lines 47-49) to the respective utilization value of said each distributed processing unit to obtain a respective weight (load / weight, col. 11, lines 3-14) for said each distributed processing unit (the load on computer system 10A-10N may be the sum of the loads of the virtual machines executing on that computer system, col. 5, lines 14-16, and the load of each virtual machine may be calculated according to the resource that it uses, col. 8, lines 35-37/ the amount of CPU time used by the virtual machine (CPUTime in FIG. 4), the amount of I/O activity (I/O Activity in FIG. 4) generated by the virtual machine, and the amount of memory consumed by the virtual machine (Memory Pages in FIG. 4) are included in the load calculation, col. 10, lines 47-54); and

using the respective weights for the distributed processing units for distributing work requests to the distributed processing units so that the respective weight for said each distributed processing unit (if the requesting computer system's load exceeds the selected computer system's load, the virtual machine migration code may migrate the selected virtual machine to the selected computer system, col. 9, lines 3-9; col. 2, lines 16-24).

30. Van does not explicitly teach obtaining a respective weight by using a mapping function. However, Greuel teaches obtaining a respective weight by using a mapping function (for each system variable, a mapping by which a raw data value associated with the corresponding system variable is mapped to a score, and for each system

variable, a weight, col. 2, 39-42 / a score mapped from the CPU utilization, col. 5, lines 4-29).

31. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Van by incorporating the teaching of a respective weight by using a mapping function as taught by Greuel in order to gain the advantage of monitoring of the health or status of a computer network to determine whether the computer network is online or offline (i.e., up or down) as a result of providing reliable, available and high performing computer networks and applications.

32. Van and Greuel do not explicitly teach using the respective weights for the distributed processing units for producing a distribution list for distributing work requests to the distributed processing units for load balancing of the work requests upon the processing units, and repetitively randomizing the distribution list during the distribution of the work requests to the distributed processing units. However, Kapoor teaches using the respective weights for the distributed processing units for producing a distribution list (an array A of numbers with W elements is created, the first w1 elements of array A are assigned a number, which corresponds to the web server with weight w1..., col. 5, lines 48-60 / after array A has been created, col. 5, lines 60-61) for distributing work requests to the distributed processing units for load balancing of the work requests upon the processing units (provide IP addresses to client requesting an IP address base on the relative weights of each particular web server such that the

workload is balanced between each of the web server, col. 5, lines 1-5) , and repetitively randomizing the distribution list during the distribution of the work requests to the distributed processing (the domain name server randomizes the list of web server, col. 5, lines 15-16).

33. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Van and Greuel by incorporating the teaching of using the respective weights for the distributed processing units for producing a distribution list for distributing work requests to the distributed processing units for load balancing of the work requests upon the processing units, and repetitively randomizing the distribution list during the distribution of the work requests to the distributed processing units as taught by Kapoor because this would allow to efficiently utilize the multiple web servers of an Internet host as well as reduce the skewed locking problems such that overall Internet traffic and response times are reduced (col. 2, lines 47-52 / after array A has been created and the numbers set accordingly, the order of all of the elements and array A are randomized as shown in step 413. In one embodiment, array A is periodically recomputed as desired such that the lists of IP addresses with their relative weights remain current, col. 5, lines 60-65).

34. **Claims 12-15 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable Komai (U.S. 2003/0187711 A1) (hereinafter Komai) in view of Greuel**

et al. (U.S. 7,003,564 B2) (herein after Greuel), further in view of Garnett et al. (U.S. 7,032,037) (herein after Garnett).

35. As to claims 12 and 30, Komai teaches in a data processing network including a network file server and a plurality of virus checking server, a method comprising:

the network file server (server 1) obtaining a respective utilization value of each virus checking server (each personal computer, paragraph 58) (Figs. 2-3, display the schedule of the user uses the personal computer 2; for example, the user is scheduled to prepare a document at the user's seat from 10:00 to 12:00 on 17th (Thursday). Moreover, it is known that the same user is scheduled to receive the certifying examination held at the conference hall for a period from 13:00 to 15:00 on 17th (Thursday), paragraph 79. Thus, Komai teaches displaying (obtaining) a respective utilization value of each virus checking server);

the network file server (server 1, paragraph 72) applying a function to the respective utilization value of said each server to obtain a respective weight for said each virus checking server (according to the schedule in Fig. 3, this user is scheduled to receive a certifying examination at a conference hall for 120 minutes from 13:00 to 15:00, immediately, the server 1 refers to an unoccupied time of 120 minutes, paragraphs 71-72);

36. Komai does not explicitly teach obtaining a respective weight by using a mapping function. However, Greuel teaches obtaining a respective weight by using a mapping

function (for each system variable, a mapping by which a raw data value associated with the corresponding system variable is mapped to a score, and for each system variable, a weight, col. 2, lines 39-42 / a score mapped from the CPU utilization, col. 5, lines 4-29).

37. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Komai by incorporating the teaching of a respective weight by using a mapping function as taught by Greuel in order to gain the advantage of monitoring of the health or status of a computer network to determine whether the computer network is online or offline (i.e., up or down) as a result of providing reliable, available and high performing computer networks and applications.

38. Komai and Greuel do not explicitly teaches the network file server using the respective weights for the virus checking servers for weighted round-robin load balancing of virus checking requests from the network file server to the virus checking servers. However, Garnett teaches using the respective weights for the servers for weighted round-robin load balancing of requests from the network file server to the servers (load balancing algorithm is the "weighted round robin" where the number of connections assigned per server is specified by a weight assigned to each server, col. 32, lines 13-16).

39. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Komai and Greuel by incorporating the teaching of the respective weights are used for weighted round-robin load balancing of the work requests upon the distributed processing units as taught by Garnett in order to gain the advantage of preventing a particular application on the server is overloaded as suggest by Garnett.

40. As to claims 13 and 31, Greuel teaches said each virus checking server collects statistics for calculation of the respective utilization value of said each virus checking server (the data collector collects a raw data value corresponding to the system variable, col. 2, lines 22-23; and col. 3, lines 38-40).

41. As to claims 14, 32, Greuel teaches the respective weight for said each virus checking server is programmed into a mapping table (table 233, Fig. 2B; col. 5, lines 4-29), and the network file server indexes the mapping table with said each respective utilization value to obtain the respective weight for said each virus checking server (the table 233 contains columns for the router name (or the address) (index), and the overall score in this example is computed as the weighted average of two numbers: (1) the interface health and (2) a score mapped from the CPU utilization, col. 5, lines 4-10).

42. As to claims 15 and 33, Garnett teaches the weighted round-robin load balancing

performs round-robin load balancing when the weights are equal (col. 32, lines 16-18).

43. **Claims 16, 18, 34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable Komai (U.S. 2003/0187711 A1) (hereinafter Komai) in view of Greuel et al. (U.S. 7,003,564 B2) (herein after Greuel), further in view of Garnett et al. (U.S. 7,032,037) (herein after Garnett) as applied to claims 12 and 30 above, and further in view of Kapoor (U.S. 5,884,038).**

44. As to claims 16 and 34, Komai and Greuel do not explicitly teach the respective weights for the virus checking servers are used for weighted round-robin load balancing of virus checking requests from the network file server to the virus checking servers by creating a distribution list containing entries indicating the virus checking servers. However, Garnett teaches the respective weights for the virus checking servers are used for weighted round-robin load balancing of virus checking requests from the network file server to the virus checking servers by creating a distribution list containing entries indicating the virus checking servers (first server ... next server in the list of available servers, col. 32, lines 4-25).

45. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Komai, Greuel, and Garnett by incorporating the teaching of the respective weights for the virus checking servers are used for weighted round-robin load balancing of virus checking requests from the

network file server to the virus checking servers by creating a distribution list containing entries indicating the virus checking servers as taught by Garnett in order to gain the advantage of preventing a particular application on the server is overloaded as suggest by Garnett.

46. Komai, Greuel, and Garnett do not explicitly, the respective weight for said each distributed processing unit specifying the number of the entries indicating said each distributed processing unit, and by randomizing the distribution list, and accessing the randomized distribution list for distributing the work requests to the distributed processing units as indicated by the entries in the randomized distribution list.

47. However, Kapoor teaches the respective weight for said each distributed processing unit specifying the number of the entries indicating said each distributed processing unit (the domain name server returns the IP address of a web server such that the total number of times that the IP address of each one of the web servers is returned in proportional to the relative weight of each web server, col. 5, lines 11-16), and by randomizing the distribution list (the domain name server randomize the list of web server, col. 5, lines 15-16 / the order of all the elements and array A are randomized, col. 5, lines 60-63), and accessing the randomized distribution list for distributing the work requests to the distributed processing units as indicated by the entries in the randomized distribution list (the domain name server receives a resolution request. The domain name server returns the IP address of a web server such that the

total number of times that the IP address of each one of the web servers is returned in proportional to the relative weight of each web server. In order to return the IP address of a web server to client, the domain name server has to access to web server lists. Thus, Kapoor teaches accessing the randomized distribution list for distributing the work requests to the distributed processing units as indicated by the entries in the randomized distribution list).

48. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Komai, Greuel, and Gamett by incorporating the teaching of the respective weight for said each distributed processing unit specifying the number of the entries indicating said each distributed processing unit, and by randomizing the distribution list, and accessing the randomized distribution list for distributing the work requests to the distributed processing units as indicated by the entries in the randomized distribution list as taught by Kapoor in order to gain the advantage of efficiently utilize the multiple web servers of an Internet host as well as reduce the skewed locking problems such that overall Internet traffic and response times are reduced (col. 2, lines 47-52).

49. As to claims 18 and 36, Kapoor teaches the network file server obtains the utilization values of the virus checking servers at the start of a heartbeat interval (domain name server periodically determines whether each one of the web server is not functioning proper or is generating time out errors by reading a list of IP addresses of

web servers for a given host and their relative weight, col. 5, lines 23-42) , randomizes the distribution list repetitively during use of the distribution list for load balancing of virus checking requests during the heartbeat interval (array A is periodically recomputed as desired, col. 5, lines 63-64), obtains new utilization values of the virus checking servers at the start of a following heartbeat interval (domain name server periodically determines whether each one of the web server is not functioning proper or is generating time out errors by reading a list of IP addresses of web servers for a given host and their relative weight, col. 5, lines 23-42), and produces a new distribution list from the new utilization values of the virus checking servers for load balancing of virus checking requests during the following heartbeat interval (domain name server connects to each web server and removes the down web servers from the list , col. 5, lines 42-44).

50. Claims 17 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable Komai (U.S. 2003/0187711 A1) (hereinafter Komai) in view of Greuel et al. (U.S. 7,003,564 B2) (herein after Greuel), further in view of Garnett et al. (U.S. 7,032,037) (herein after Garnett) as applied to claims 16 and 34 above, further in view of Kapoor (U.S. 5,884,038), and further in view of Grochowski (U.S. 6,115,807).

51. As to claims 17, 35, Komai, Greuel, Garnett , and Kapoor do not explicitly teach re-randomizing the distribution list for re-use once the end of the distribution list is reached during the distributing of the work requests to the virus checking servers as

indicated by the entries in the randomized distribution list. However, Grochowski teaches re-randomizing the distribution list for re-use once the end of the distribution list is reached during the distributing of the work requests to the virus checking servers as indicated by the entries in the randomized distribution list (if the decoder comes to the end of the queue, it rotates around to the beginning of queue (col.2, lines 65-67). As to the limitation of "randomize", Grochowski teaches "rotating". Noting that randomizer is also defined as rotator. Extrinsic evidence, inventor name (U.S. 6,819,276), disclose randomizer is also defined as rotator (col. 5, lines 46-47).

52. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Komai, Greuel, Garnett, Kapoor by incorporating the teaching of re-randomizing the distribution list for re-use once the end of the distribution list is reached during the distributing of the work requests to the virus checking servers as indicated by the entries in the randomized distribution list as taught by Grochowski in order to gain the advantage of determining how many of the decoded instructions may issue in a next clock cycle thereby to ensure that neither too many nor too few instructions enter pipeline at any given time thereby improve the effective of processors.

Response to the argument

53. Applicant arguments filed on 12/24/08 had been considered but they are not persuasive. In the remarks applicant argued

(1) Van Rietschote balances this loading is a substantially different way from the method of applicant's claims 1-6 and 19-24.

(2) More importantly, there should not be confusion of the virtual machines of Van with the computer systems in Van if the virtual machines are to be considered work requests that are distributed to the computer systems of Van as is done in the first paragraph on page 5 of the Official Action. If the virtual machines of Van are considered to be work requests and the computer systems of Van are considered to be distributed work requests, then the calculating of the load of each virtual machine according to the resources that it uses in Van is not properly considered to be "obtaining a utilization value of each distributed processing unit" and "applying a mapping function to the respective utilization value of each distributed processing unit to obtain a respective weight of said each distributed processing unit".

(3) invention of applicant's claims 1-6 and 19-24. Greuel et al. is directed to a method and apparatus for customizably calculating and displaying health of a computer network (Greuel, Title), and does not appear to concern load balancing. Baratz is directed to managing communication in a cellular network (such as GSM networks, GPRS networks, IS95-B networks, and HSCSD networks) to achieve better use of the network capacity of a cellular network and to enable new services based on resource availability of the cellular network by considering the resource availability of network components in controlling applications and services that can be scheduled to times when such resources are available. (Baratz, page 2, par. [0045]).

(4) it is not seen where Greuel table 233 in Fig. 1B shows the respective weight or col. 4 or col. 5 show that the respective weight is programmed into a mapping table.

(5) Grochowski is directed to a static instruction decoder utilizing a circular queue to decode instructions and select instructions to be issued. (Grochowski, Title.) It is respectfully submitted that without the benefit of improper hindsight a person of ordinary skill in the data processing network art would not be looking to the superscalar processor art such as Grochowski to improve the load balancing in the data processing network of Van. Nor is it seen where Grochowski discloses the "randomizing" step or function expressly recited in applicant's dependent claims 10 and 28.

(6) It is not seen where Karpoor discloses that "this randomizing is performed repetitively during the distribution of the work request to the distributed processing unit." instead of during initialization.

(7) Komani discloses in FIG. 1 a virus checking program 4 for a personal computer 1, and a server 2 for schedule management to notify the virus checking program of unoccupied time in the schedule (command of startup). Komani appears to be entirely satisfactory for its intended purpose of a personal computer performing virus checking for the personal computer during unoccupied time. (See, e.g., page 1 paragraph [0007].) Thus, there is no reason to modify Komani for load balancing of the virus checking requests from a network file server to virus checking servers, for example, by a round-robin technique.

54. Examiner respectfully traverses Applicant's remarks:

As to point (1), Van Rietschote teaches balancing the load of virtual machines (applications) among the computer system in cluster (col. 1, lines 8-10). In fact, Van Rietschote teaches:

obtaining a respective utilization value of each distributed processing unit (the load on computer system 10A-10N may be the sum of the loads of the virtual machines executing on that computer system, col. 5, lines 14-16. In order to calculate the load (weight) on the computer systems 10A-10N, the loads of the virtual machines (applications) are obtained. Thus, Van inherently and obviously to one of ordinary skill in the art discloses a respective loads of the virtual machines of computer system is obtain(utilization value of each distributed processing unit is obtaining);

applying a function (formula 9, Fig. 4; col. 10, lines 47-49) to the respective utilization value of said each distributed processing unit to obtain a respective weight (load / weight, col. 11, lines 3-14) for said each distributed processing unit (the load on computer system 10A-10N may be the sum of the loads of the virtual machines executing on that computer system, col. 5, lines 14-16, and the load of each virtual machine may be calculated according to the resource that it uses, col. 8, lines 35-37/ the amount of CPU time used by the virtual machine (CPUTime in FIG. 4), the amount of I/O activity (I/O Activity in FIG. 4) generated by the virtual machine, and the amount of memory consumed by the virtual machine (Memory Pages in FIG. 4) are included in the load calculation, col. 10, lines 47-54); and

using the respective weights for the distributed processing units for distributing work requests to the distributed processing units so that the respective weight for said

each distributed processing unit (if the requesting computer system's load exceeds the selected computer system's load, the virtual machine migration code may migrate the selected virtual machine to the selected computer system, col. 9, lines 3-9; col. 2, lines 16-24).

As to point (2) Rietschote teaches:

obtaining a respective utilization value of each distributed processing unit (the load on computer system 10A-10N may be the sum of the loads of the virtual machines executing on that computer system, col. 5, lines 14-16. In order to calculate the load (weight) on the computer systems 10 A-10N, the loads of the virtual machines (applications) are obtained. Thus, Van inherently and obviously to one of ordinary skill in the art discloses a respective loads of the virtual machines of computer system is obtain(utilization value of each distributed processing unit is obtaining);

applying a function (formula 9, Fig. 4; col. 10, lines 47-49) to the respective utilization value of said each distributed processing unit to obtain a respective weight (load / weight, col. 11, lines 3-14) for said each distributed processing unit (the load on computer system 10A-10N may be the sum of the loads of the virtual machines executing on that computer system, col. 5, lines 14-16, and the load of each virtual machine may be calculated according to the resource that it uses, col. 8, lines 35-37/ the amount of CPU time used by the virtual machine (CPUTime in FIG. 4), the amount of I/O activity (I/O Activity in FIG. 4) generated by the virtual machine, and the amount of

memory consumed by the virtual machine (Memory Pages in FIG. 4) are included in the load calculation, col. 10, lines 47-54).

As to point 3, Examiner respectfully traverses the applicant's remarks: in response to Applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the references are within the field of the inventor's endeavor and the motivation is allow monitoring the available of idle resources in a network and use these resources for additional services. However, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin*, 170 USPQ 545 (CCPA 1969).

In addition, Greuel teaches monitoring of the health or status of a computer network (resources) by collecting processor utilization metric... to provide good service (abstracts; col. 1, lines 16-52) while Baratz teaches monitoring usage of the network, to predict the availability server to provide service (paragraph 48). Thus, It would have

been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Van and Greuel by incorporating the teaching of the respective weight for said each distributed processing unit specifies a respective frequency at which the work requests are distributed to said each distributed processing unit as taught by Baratz because this allow to monitor the available of idle resources in a network and use these resource for additional services.

As to point (4), Greuel teaches certain entries in the table 233 can be hyperlinks to get more details information about that entry. For example, the numbers in the interface health column of the table 233 can be hyperlinks. Clicking on the "100%" interface health score corresponding to the router resource named "cisco2522" (col. 5, lines 29-45; table 233, Fig. 2B; col. 5, lines 4-29).

As to point (5), Examiner respectfully traverses the applicant's remarks: in response to Applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the references are within the field of the inventor's endeavor and the motivation is allow to gain advantage of

determining how many of the decoded instructions may issue in a next clock cycle thereby to ensure that neither too many nor too few instructions enter pipeline at any given time thereby improve the effective of processors. However, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin*, 170 USPQ 545 (CCPA 1969).

In addition, Grochowski teaches if the decoder comes to the end of the queue, it rotates around to the beginning of queue (col.2, lines 65-67). As to the limitation of "randomize", Grochowski teaches "rotating". Noting that randomizer is also defined as rotator. Extrinsic evidence, inventor name (U.S. 6,819,276), disclose randomizer is also defined as rotator (col. 5, lines 46-47).

As to point (6), Kapoor discloses that this randomizing is performed repetitively during the distribution of the work request to the distributed processing unit (after array A has been created and the numbers set accordingly, the order of all of the elements and array A are randomized as shown in step 413. In one embodiment, array A is periodically recomputed (repetitively randomized) as desired such that the lists of IP addresses with their relative weights remain current, col. 5, lines 60-65).

As to point (7), Komai teaches: Figs. 2-3, display the schedule of the user uses the personal computer 2; for example, the user is scheduled to prepare a document at the

user's seat from 10:00 to 12:00 on 17th (Thursday). Moreover, it is known that the same user is scheduled to receive the certifying examination held at the conference hall for a period from 13:00 to 15:00 on 17th (Thursday), paragraph 79. Thus, Komai teaches displaying (obtaining) a respective utilization value of each virus checking server. However, Komai does not explicitly teach obtaining a respective weight by using a mapping function. Greuel teaches obtaining a respective weight by using a mapping function (for each system variable, a mapping by which a raw data value associated with the corresponding system variable is mapped to a score, and for each system variable, a weight, col. 2, lines 39-42 / a score mapped from the CPU utilization, col. 5, lines 4-29).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Komai by incorporating the teaching of a respective weight by using a mapping function as taught by Greuel in order to gain the advantage of monitoring of the health or status of a computer network to determine whether the computer network is online or offline (i.e., up or down) as a result of providing reliable, available and high performing computer networks and applications.

55. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CAMQUY TRUONG whose telephone number is (571)272-3773. The examiner can normally be reached on 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng Ai An can be reached on (703)305-9678. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/VAN H NGUYEN/
Primary Examiner, Art Unit 2194

Camquy Truong

April 8, 2009